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Land-use change impacts on ecosystem services: an overview

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Land-use changes are one of the most critical drivers of change. Territorial dynamics such as urbanization, agriculture intensification and land abandonment have important implications for ecosystems and the services supplied. This work aims to overview the impacts of land-use changes on ecosystem services supply (ES). Urbanization and agriculture intensification have detrimental impacts in all regulating ES (e.g., air quality, microclimate regulation, flood regulation, carbon storage). On the other hand, the afforestation process positively impacts all the ES abovementioned. Urbanization and land consumption reduce agriculture and natural areas, key for food supply. Therefore, provisioning ES (e.g., food, fodder, water, timber) are drastically affected. Agriculture intensification may short term positive impacts on food production. However, it occurs at the expense of high soil degradation, reducing the ecosystem capacity to supply wild food, water, fodder and medicinal plants. The land abandonment process implies a decrease in the cultivable area. Therefore, it reduces the capacity of food production. Also, water supply is reduced since the afforestation process increases water consumption and evapotranspiration. However, other benefits for provisioning ES occur from soil degradation, such as increasing wild food, medicinal plants, and timber. Finally, urbanization negatively impacts most cultural ES (e.g., natural heritage, cultural heritage, landscape aesthetics). Some benefits can be positive for recreation or knowledge systems. Except for knowledge systems, agriculture intensification negatively impacts all cultural ES (e.g., recreation, natural heritage, cultural heritage, landscape aesthetics). Land abandonment has detrimental impacts on cultural heritage (e.g., loss of traditional landscapes). However, it positively impacts all other cultural ES (e.g., recreation, landscape aesthetics, knowledge systems).

Keywords: Land use, ecosystem services, afforestation, soil degradation

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